

Notice of Allowability

Application No.

10/501,267

Examiner

Katherine A. Bareford

Applicant(s)

ARAM, MEHDI

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the appeal brief of July 26, 2007.
2. ☒ The allowed claim(s) is/are 1-5, 7-13 and 26-28.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: the closest prior art is to McCormick (US 4042617), Ogden (US 3066042), Japan 2000-017418 and Prasse (US 3617349), with McCormick providing a single layer of wear resistant material onto a surface of a piston ring by thermal spraying followed by heat treating to diffuse the coating material into the underlying surface (column 1, lines 35-45, column 3, lines 35-40, column 4, lines 5-30 and 35-60). However, McCormick does not provide a teaching of the additional coating material layers of the same coating material subject to successive heat treatment, or that the resulting piston ring coating including the plurality of applied layers has a porosity of between 1 and 15 vol%, as is required by claim 1. While Prasse teaches a desirable porosity of 7-20 percent for a thermally sprayed coating on a piston ring (column 6, lines 10-50, column 2, lines 55-70), Prasse does not teach the multiple layers or the heat treatment. Ogden provides applying multiple layers of material followed by peening and heat treatment for each layer rather than a single thick coating (column 2, lines 10-6), however, Ogden provides that the porosity is removed by this process, such that the coating becomes substantially non-porous. Japan '418 teaches that a single coating layer applied to a bearing base can be applied by thermal spray to have a porous coating, and that after heat treatment the coating is hardened and has a reduced porosity (see the abstract and paragraphs [008] – [0010]). However, the combined references do not provide the required expectation of predictable results, as Ogden provides the suggestion of removing porosity when

applying multiple layers and Japan '418 only shows what would happen with one heat treatment, and does not indicate what the porosity would become after repeated heat treatments (due to the successive heat treating of formed layers), and thus does not teach or suggest what the resulting piston ring coating porosity would be after the repeated coating applications and heat treatments.

The Examiner notes that Borom et al (US 5989343) was cited in the PCT examination, however, Borom is not indicated for coating piston rings or for controlling the porosity of the applied coating layers. The Examiner also notes that Ogden (US 3066042) was also cited in the PCT examination, however, it does not suggest the invention as now claimed for the reasons discussed in the paragraph above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

2. The Examiner notes that a translation of Japan 2000-017418 is included with this notice of allowance.
3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER